

REMARKS

By this Amendment, claim 15 and the specification are amended and claims 7 and 14 are cancelled without prejudice or disclaimer to the subject matter therein. The specification is amended to correct minor clerical mistakes. Claim 15 is amended to clarify its intended meaning. No new matter has been added. Accordingly, after entry of this Amendment, claims 1-6, 8-13, 15-17 and 19 will remain pending in the patent application. Reconsideration and allowance of the present patent application based on the foregoing amendments and following remarks are respectfully requested.

Applicants appreciate the Examiner's indication that claims 1-6 and 19 are allowed.

Claims 7 and 14 were rejected under 35 U.S.C. §112, second paragraph. Claims 7 and 14 are cancelled without prejudice or disclaimer to the subject matter therein thus rendering moot the rejection of these claims.

Claims 8-12 were rejected under 35 U.S.C. §103(a) based on Lin (U.S. Patent No. 5,929,997) in view of Nakamura *et al.* (JP 2000299276) (hereinafter "Nakamura"). The rejection is respectfully traversed.

Claim 8 recites a device manufacturing method comprising, *inter alia*, coupling light from the at least one alignment marker on the second surface of said substrate, through the substrate table, with at least one optical system in the substrate table. As conceded by the Examiner on page 3, line 7 of the Office Action, Lin does not teach or suggest these features. However, the Examiner relied on Nakamura as allegedly teaching these features and contended that it would have been obvious to obtain these features. Applicants respectfully disagree and submit that Nakamura fails to remedy the deficiencies of Lin.

Nakamura discloses a lithographic apparatus that includes an alignment system AS1-AS2 for illuminating marks on a substrate 8 and on a reference member 9. (*See* FIGS. 1 and 2 and paragraph [0019]). However, unlike the invention of claim 8, Nakamura merely discloses that the optical system (L3, 16) that couples light from the alignment mark provided on top of the substrate is located outside the substrate table. (*See* FIG. 1 of Nakamura). Nakamura is silent as to coupling light from the alignment mark provided on a back surface of the substrate, through the substrate table, with at least one optical system in the substrate table. As such, any reasonable combination of Lin and Nakamura cannot result, in any way, in the invention of claim 8. Therefore, for at least this reason, claim 8 is patentable over Lin, Nakamura and a combination thereof.

It is noted that elements (17A and 17B) and (L1) of Nakamura do not constitute the optical system of claim 8 because these elements do not couple light from the at least one alignment marker on the second surface of the substrate. Instead, these elements merely transmit light from a light source 7. Therefore, Nakamura cannot cure the deficiencies of Lin.

Furthermore, Applicants respectfully submit that there is no motivation or suggestion to combine the teachings of these references and to modify Lin in view of Nakamura.

First, none of the cited references teaches or suggests coupling light from the at least one alignment marker on the second surface of the substrate, through the substrate table, with at least one optical system in the substrate table. To the contrary, Lin and Nakamura both disclose that the optical systems that couple light from the alignment marks are located outside the substrate table. As such, one skilled in the art would clearly not be motivated to modify Lin based on Nakamura's teachings.

Second, Lin discloses that the wafer chuck is transparent for transmitting the alignment beam therethrough and that reflectors 135-2, 135-3 are located below the chuck. (See col. 7, lines 12-20 of Lin). As such, by virtue of teaching that the wafer chuck is transparent and that light originating from the alignment marks can be passed through the wafer chuck, one skilled in the art would clearly not be motivated to arrange reflectors 135-3 and 135-2 within the wafer chuck.

The Examiner indicated that it would have been obvious "to provide the alignment optical system in the substrate table in order to combine two different structures of Lin into one as in Nakamura to conserve workplace." (See Office Action at page 3). Applicants respectfully disagree for at least the following reasons.

First, there is clearly no indication that either Lin or Nakamura suffers from any problem related to work space. Therefore, this *post hoc* justification for the asserted combination is based on an improper application of hindsight based on Applicants' own specification.

Second, contrary to the Examiner's allegation, Nakamura does not combine two different structures into one. Nakamura clearly teaches that the optical systems, which are used to couple light from the alignment marks, are located outside the substrate table. (See Abstract and FIG. 1). As such, Applicants respectfully submit that the Examiner's reason for the suggested modification lacks merit.

Claims 9-12 are patentable over Lin, Nakamura and a combination thereof at least by virtue of their dependency from claim 8 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 8-12 under 35 U.S.C. §103(a) based on Lin in view of Nakamura are respectfully requested.

Claim 13 was rejected under 35 U.S.C. §103(a) based on Lin in view of Nakamura and further in view of van Empel *et al.* (hereinafter “van Empel”). The rejection is respectfully traversed.

Claim 13 depends from claim 8 and is, therefore, patentable over Lin and Nakamura for at least the same reasons provided above in connection with claim 8. Namely, claim 13 is patentable over Lin, Nakamura or a combination thereof at least because this claim recites a device manufacturing method comprising, *inter alia*, coupling light from the at least one alignment marker on the second surface of said substrate, through the substrate table, with at least one optical system in the substrate table.

Van Empel fails to remedy the deficiencies of Lin and Nakamura. Van Empel merely discloses a substrate table having a supporting face for supporting a substrate, the supporting face being at least partially coated with a layer of electrically conductive material. Van Empel is however completely silent as to coupling light from the at least one alignment marker on the second surface of said substrate, through the substrate table, with at least one optical system in the substrate table. Therefore, the combination of Lin, Nakamura and van Empel cannot result, in any way, in the invention of claim 13.

Furthermore, and as mentioned previously, Applicants respectfully submit that there is no motivation or suggestion to combine the cited references.

Accordingly, reconsideration and withdrawal of the rejection of claim 13 under 35 U.S.C. §103(a) based on Lin in view of Nakamura and van Empel are respectfully requested.

Claims 15-17 were rejected under 35 U.S.C. §103(a) based on Sogard *et al.* (U.S. Patent No. 6,376,329) (hereinafter “Sogard”) in view of Nakamura. The rejection is respectfully traversed.

Claim 15 recites a device manufacturing method wherein, *inter alia*, the substrate table includes an optical system that comprises optics arranged to form an image of the at least one alignment marker in a plane which is substantially perpendicular to an optical axis of the alignment system, the image being located outside of a perimeter of the substrate. As conceded by the Examiner on page 4, line 7 of the Office Action, Sogard does not teach or suggest these features. However, the Examiner relied on Nakamura as allegedly teaching these features and contended that it would have been obvious to obtain the optical system recited in claim 15. Applicants respectfully disagree and submit that Nakamura fails to remedy the deficiencies of Sogard for similar reasons as provided above in claim 8.

Thus, unlike the invention of claim 15, Nakamura merely discloses that the optical system (L3, 16) that directs light from the alignment mark provided on top of the substrate is located outside the substrate table. (See FIG. 1 of Nakamura). Nakamura is silent as to coupling light from the alignment mark provided on a back surface of the substrate, through the substrate table, with at least one optical system in the substrate table. As such, any reasonable combination of Sogard and Nakamura cannot result, in any way, in the invention of claim 15. Therefore, for at least this reason, claim 15 is patentable over Sogard, Nakamura and a combination thereof.

Furthermore, Applicants respectfully submit that there is no motivation or suggestion to combine the teachings of these references and to modify Sogard in view of Nakamura.

First, none of the cited references teaches or suggests a substrate table including an optical system that comprises optics arranged to form an image of the at least one alignment marker in a plane which is substantially perpendicular to an optical axis of the alignment system, the image being located outside of a perimeter of the substrate. To the contrary, Sogard and Nakamura both disclose that the optical systems that couple light from the alignment marks are located outside the substrate table. As such, one skilled in the art would clearly not be motivated to modify Lin based on Nakamura's teachings.

Second, Sogard discloses that the substrate table includes throughbores in order to allow access to the alignment marks from the backside surface of the substrate. (See col. 5, lines 39-44). As such, by virtue of teaching that the substrate table includes throughbores and that light originating from the alignment marks can be passed through these throughbores, one skilled in the art would clearly not be motivated to arrange elements 14, 13 and 15 of Sogard within the substrate table.

The Examiner indicated that it would have been obvious "to provide the alignment optical system located in the substrate table in order to combine two different structures of Sogard into one as in Nakamura to conserve workplace." (See Office Action at page 4). Applicants respectfully disagree for at least the following reasons.

First, there is clearly no indication that either Sogard or Nakamura suffers from any problem related to work space. Therefore, this *post hoc* justification for the asserted combination is based on an improper application of hindsight based on Applicants' own specification.

Second, contrary to the Examiner's allegation and as mentioned previously, Nakamura does not combine two different structures into one. Nakamura clearly teaches that the optical systems, which are used to couple light from the alignment marks, are located

outside the substrate table. (*See* Abstract and FIG. 1). As such, Applicants respectfully submit that the Examiner's reason for the suggested modification lacks merit.

Claims 16-17 are patentable over Sogard, Nakamura and a combination thereof at least by virtue of their dependency from claim 15 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 15-17 under 35 U.S.C. §103(a) based on Sogard in view of Nakamura are respectfully requested.

Applicants have addressed all the Examiner's rejections and objections and respectfully submit that the application is in condition for allowance. A notice to the effect is earnestly solicited.

If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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